Hi-Speed Industrial Service
7030 Ryburn Dr
Millington, Tn 38053
901-873-5300

AC Inspection as Found

Sinco
21 Ranchette Rd
Conway, AR 72032

FolderID: 103936
FormID: 22785757

AC Inspection - Rev. 2

Location:	LR MOTORSHOP
Serial Number:	1PC31042AA600FB4
Description:	45.0 KW SIEMENS

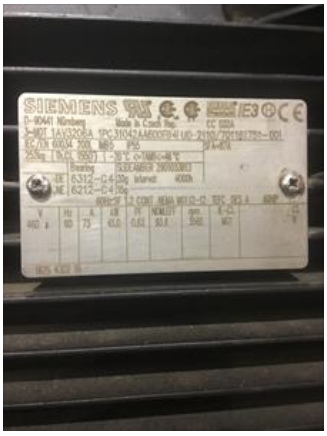
Hi-Speed Job Number:	103936
Manufacturer:	Siemens
Product Number:	1AV3206A
Serial Number:	1PC31042AA600FB4
HP/kW:	45.0 (HP)
RPM:	3560 (RPM)
Frame:	200L
Voltage:	460
Current:	73 (Amps)
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.2
Enclosure:	TEFC
# of Leads:	6
J-box Included:	Complete
Coupling/Sheave:	Gear
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Final
Rewind:	Yes
Shaft Machined Fit Repairs Required:	Yes
Bearing Housing Machined Fit Repairs Required:	Yes
Heaters:	No
Winding Type :	Random Wound
Bearing Type:	Rolling Element

Priorities Found: **4 - High** **4 - Good**

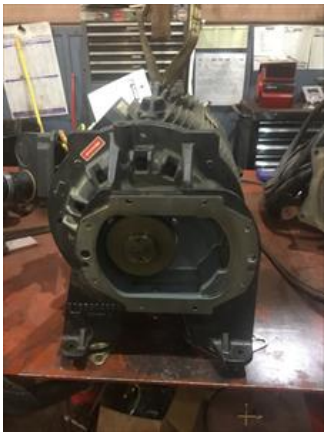
Overall Condition

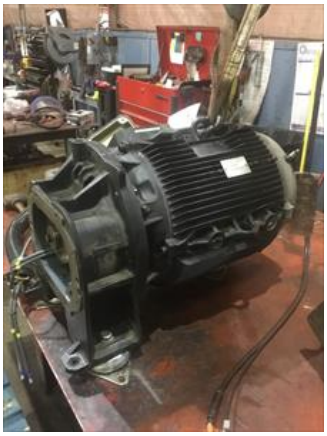
1. Report Date

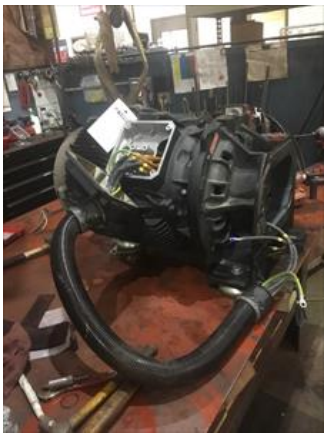
2. Nameplate Picture P37

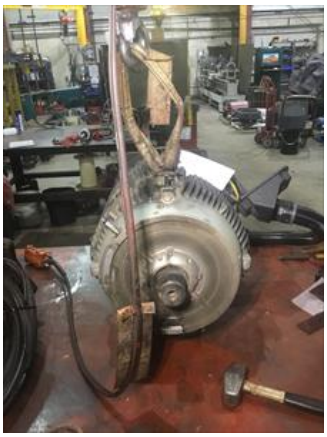


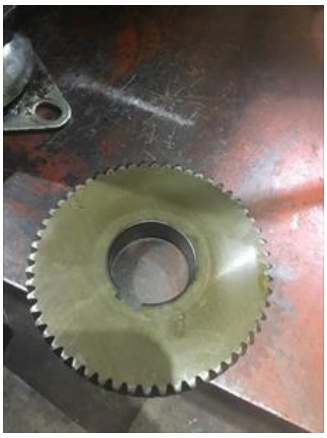
3. Photos of all six sides of the machine. P45

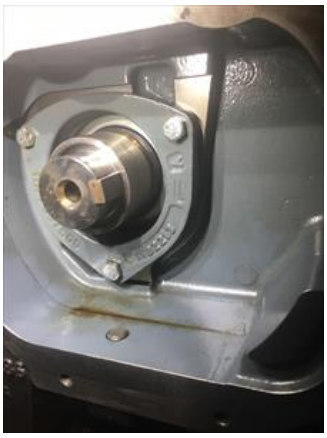


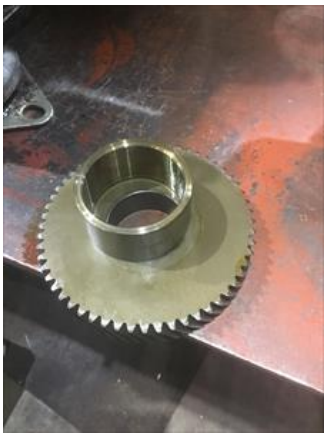


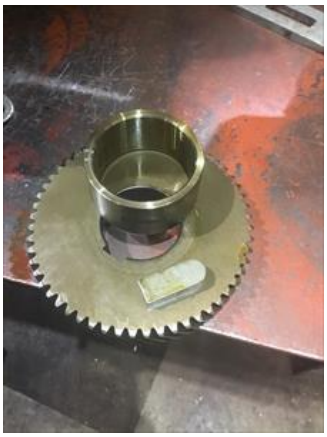


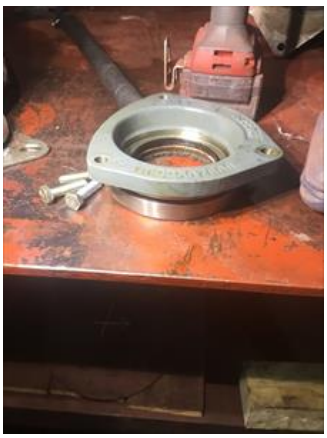


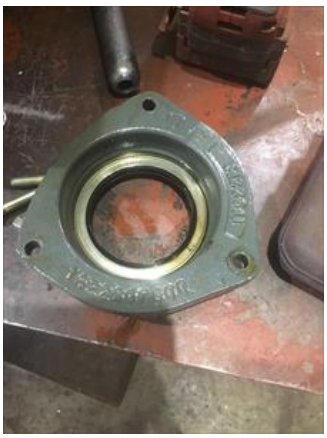


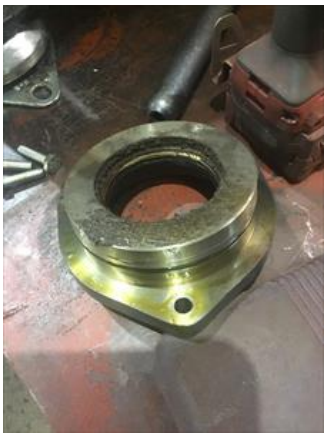


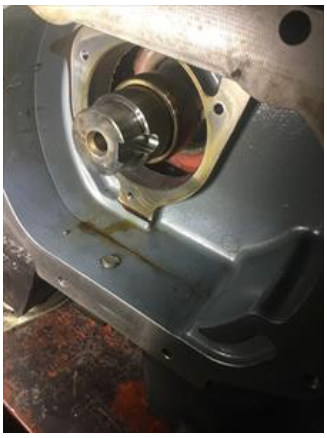


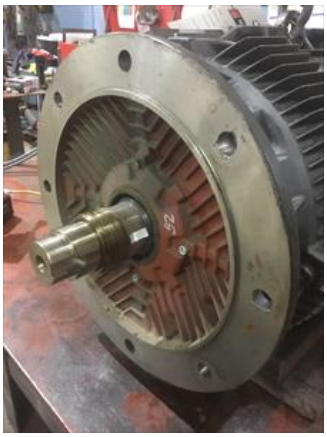


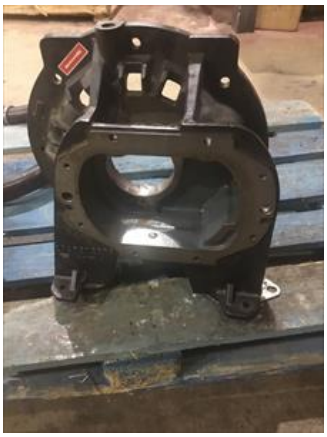


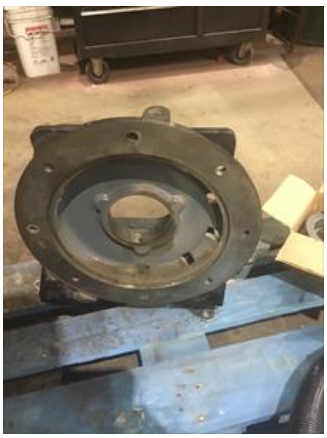


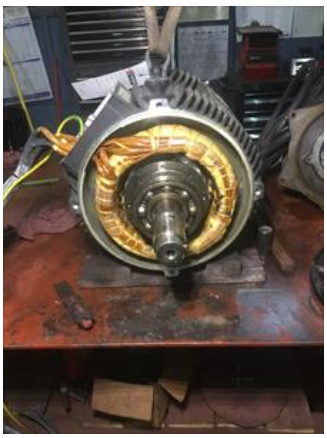


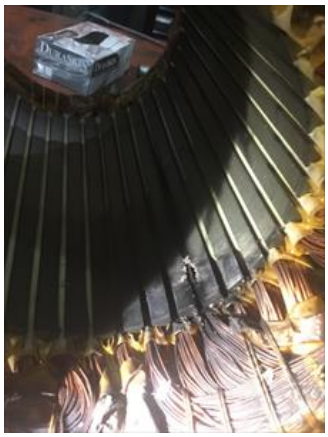


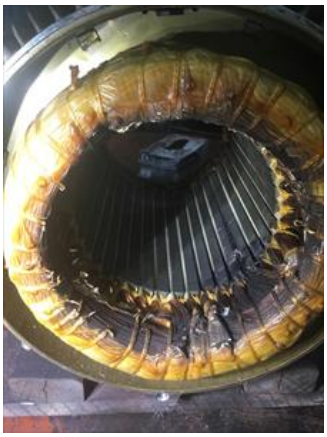


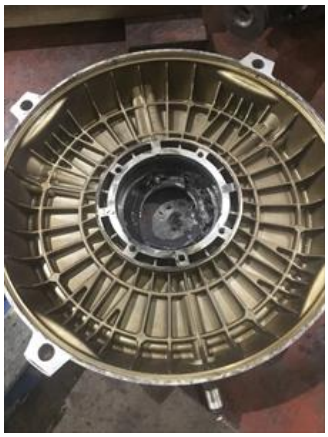


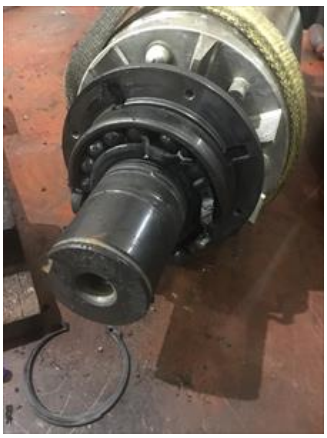


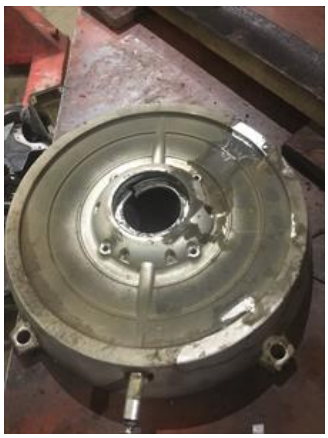




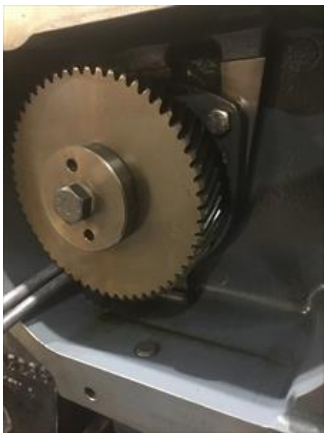






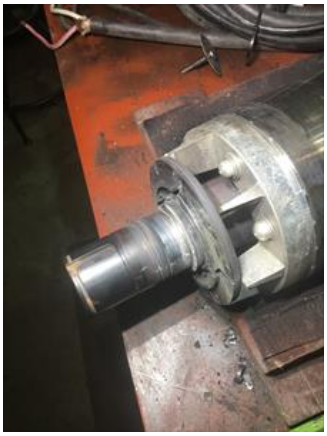


4.	Describe the Overall Condition of the Equipment as Received ***Serviceable***		
5.	Distance from the end of the shaft to the Coupling/Sheave	**0 inches**	P76

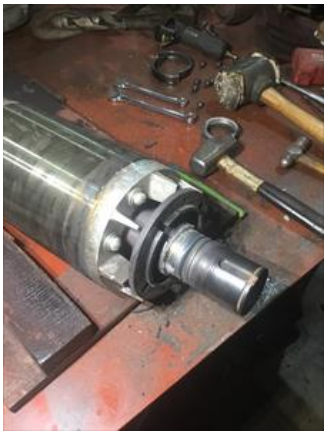


Initial Mechanical/Electrical

6.	Does Shaft Turn Freely?	**(N) No**	
7.	Does the shaft require T.I.R in Lathe to identify additional repairs?	**(Yes) Yes**	P16

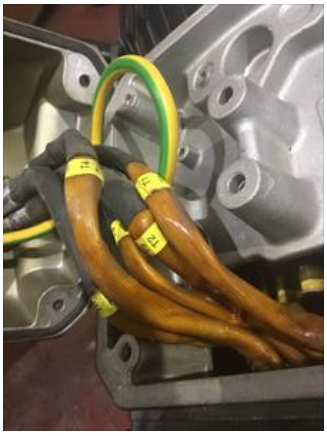


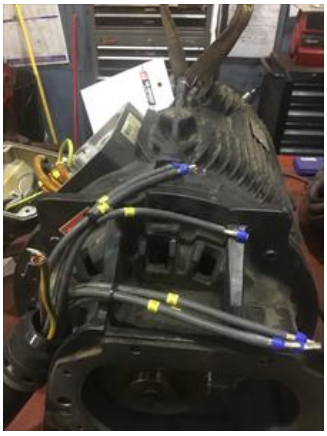
8.	Does Shaft Have Visible Damage?	**(Yes) Yes**	P26



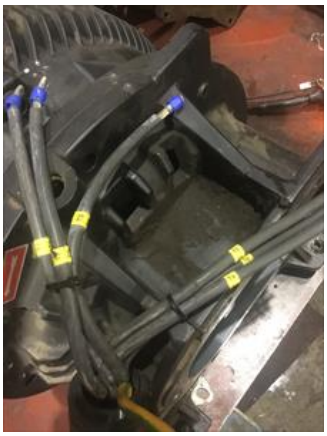
9.	Assembled Shaft Runout	**Inches**
	Unable to perform due to locked up shaft	
10.	Assembled Shaft End Play	**inches**
11.	Air Gap Variation <10%	**no**

12.	Lead Condition	**(P) Pass**	P69





13.	Lead Length	**52 Inches**	
14.	Does it have Lugs?, If so what is the Stud Size?	**(No) No**	
15.	Lead Numbers	**T1-T6**	P97



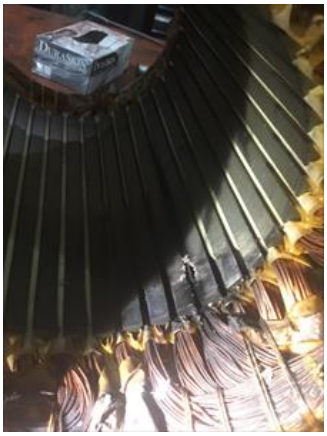
16.	Frame Condition	**pass**	
17.	Fan Condition		
	Missing		
18.	Broken or Missing Components	**missing fan and fan cover**	

Initial Electrical Inspection

19.	Insulation Resistance/Megger	**Megohms**	
20.	Winding Resistance		

1-2	1-3	2-3

21.	Perform Surge Test		P57
	Stator windings blown in slot.		



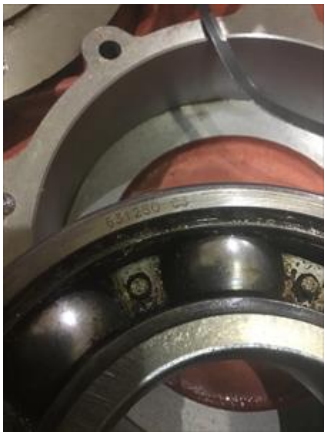
22.	Number of Stator Slots	**36**	
23.	Stator Condition	**rewind**	
	Recommend core test on stator iron		
24.	Stator Thermistors/Ohms		
25.	Stator Overloads/Ohms		

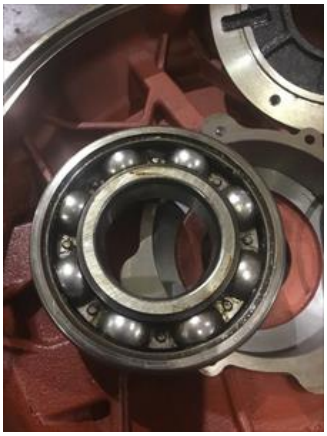
Mechanical Inspection

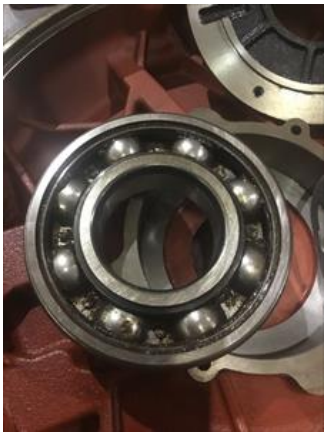
26.	Drive End Bearing Brand	**ORS**	

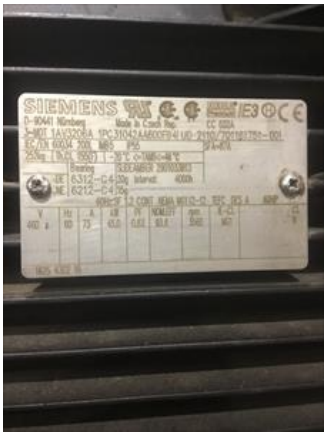
27.	Drive End Bearing Number-	**6312SO-C3**	P32

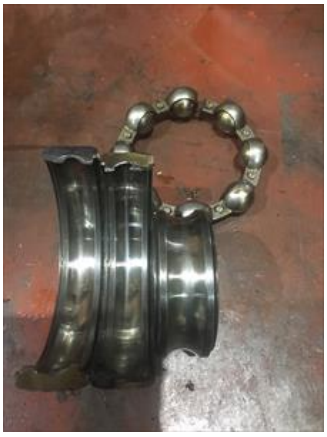
Motor name plate requires a C4 fit.



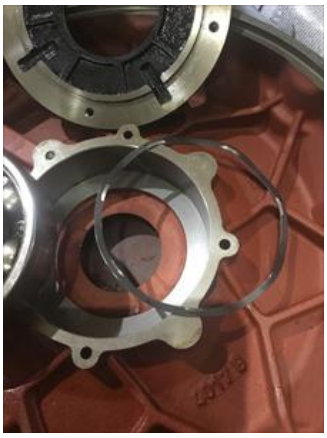




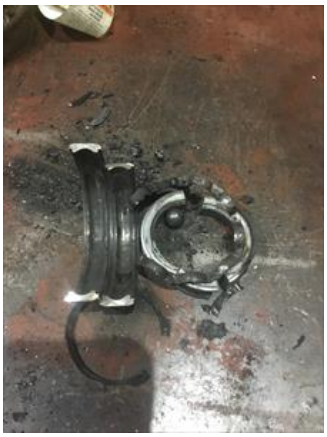


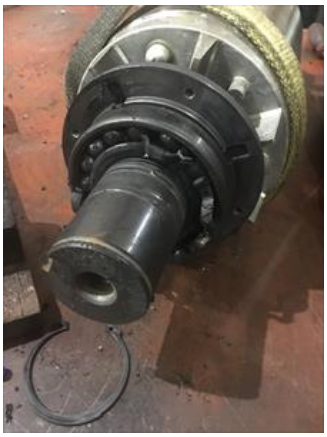


28.	Drive End Bearing Qty.	**1**	
29.	Drive End Bearing Type	**(Ball) Ball Bearing**	
30.	Drive End Lubrication Type	**(Grease) Grease Lubricated**	
31.	Drive End Bearing Insulation or Grounding Device?	**none**	
32.	Drive End Wavy Washer/Snap-Ring Other Retention Device?	**wavy washer**	P77



33.	Drive End Bearing Condition	**replace**	
34.	Opposite Drive End Bearing Brand	**un-readable**	
35.	Opposite Drive End Bearing Number-	**un-readable**	
	Requires a C4 fit.		
36.	Opposite Drive End Bearing Qty.	**1**	P103



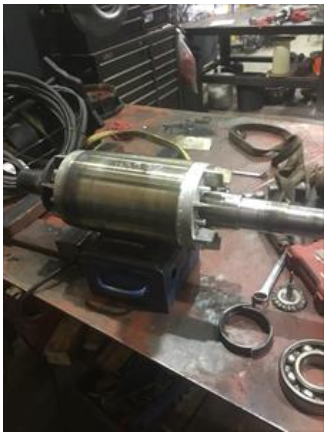


37.	Opposite Drive End Bearing Type	**(Ball) Ball Bearing**	
38.	Opposite Drive End Lubrication Type	**(Grease) Grease Lubricated**	
39.	Opposite Drive End Bearing Insulation or Grounding Device?	**none**	
40.	Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	**snap ring**	
41.	Opposite Drive End Bearing Condition	**catastrophic cage failure**	
42.	Drive End Seal	**VS-060**	P120

43.	Opposite Drive End Seal	**none present**	

Rotor Inspection

44.	Rotor Type/Material	**(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast**	P3



45.	Growler Test	**(Pass) Pass**
46.	Number of Rotor Bars	**22**
47.	Rotor Condition	**pass**
48.	List the Parts needed for the Repair Below	

1) Rewind stator/ core repair. Recommend core test.
2)Re-sleeve ODE housing bearing fit.
3) Repair ODE housing air seal / shaft opening
4)Repair ODE shaft bearing journal.

49.	Signature of Technician that Disassembled Motor	**Terrence Holland**

Mechanical Fits- Rotor

50.	Shaft Runout	**inches**

Unable to perform due to destroyed ode shaft bearing journal

51. Rotor Runout

Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing

52. Coupling Fit Closest to Bearing Housing

0 Degrees	90 Degrees	120 Degrees

53. Coupling Fit Closest to the end of the Shaft

0 Degrees	60 Degrees	120 Degrees
1.8119	**1.8119**	**1.8119**

54. Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees
2.363	**2.3628**	**2.363**

55.	Drive End Bearing Shaft Fit Condition		**(P) Pass**

56. Opposite Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees

Fail.

57. Opposite Drive End Bearing Shaft Fit Condition **(F) Fail**

Bearing was welded onto the shaft fit

58. Shaft Air Seal Fits

Drive End Air Seal	Opposite Drive End Air Seal
	fail

Mechanical Fits- Bearing Housings

59. Drive End - Endbell Bearing Fit

0 Degrees	60 Degrees	120 Degrees
5.119	**5.1191**	**5.1191**

60. Drive End - Endbell Bearing Fit Condition **(P) Pass**

61. Opposite Drive End - Endbell Bearing Fit

0 Degrees	60 Degrees	120 Degrees

Excessive wear from bearing failure

62. Opposite Drive End - Endbell Bearing Fit Condition **(F) Fail**

Excessive wear from bearing failure.

63. Bearing Cap Condition

Drive End Bearing Cap	Opposite Drive End Bearing Cap
pass	

ODE is welded onto the shaft

64. End Bell Air Seal Fits

Drive End Air Seal	Opposite Drive End Air Seal
pass	**fail**

65. List Machine Work Needed Below

1) Re-sleeve ODE housing bearing fit.
2) Repair ODE housing air seal / shaft opening
3)Repair ODE shaft bearing journal, and bearing shoulder.
4) Remove welded on ODE bearing cap and repair shaft opening cracks.

66. Technician **Terrence Holland**

Co witness: Cw

Root Cause of Failure

67. Failure locations

Windings shorted
ODE shaft bearing journal and shoulder.

68. Root cause of failure

ODE bearing cage suffered catastrophic failure. This caused the rotor to impact the stator iron and windings causing the motor to fail. The DE bearing was a C3 fit instead of the nameplate required C4 fit. The ODE bearing was destroyed and un-readable, but the race was welded to the shaft fit.

Dynamic Balance Report

69. Rotor Weight and Balance Grade

Rotor Weight	Balance Grade

70. Initial Balance Readings

Drive End	Opposite Drive End

71. Final Balance Readings

Drive End	Opposite Drive End

72. Technician

Rewind

73. Core Test Results - Watts loss per Pound

Pre-Burnout	Post Burnout

74. Core Hot Spot Test

Pre-Burnout	Post-Burnout

75. Post Rewind Electrical Test- Insulation Resistance

76. Post Rewind Polarization Index

77. Post Rewind Winding Resistance

1-2	1-3	2-3

78. Post Rewind Surge Test

79. Post Rewind Hi-Pot

80. Technician

Mechanical Fits- Rotor - Post Repair

81. Shaft Runout Post Repair

82. Rotor Runout Post Repair

Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing

83. Coupling Fit Closest to Bearing Housing Post Repair

0 Degrees	90 Degrees	120 Degrees

84. Coupling Fit Closest to the end of the Shaft Post Repair

0 Degrees	60 Degrees	120 Degrees

85. Drive End Bearing Shaft Fit Post Repair

0 Degrees	60 Degrees	120 Degrees

86. Opposite Drive End Bearing Shaft Fit Post Repair

0 Degrees	60 Degrees	120 Degrees

87. Shaft Air Seal Fits Post Repair

Drive End Air Seal	Opposite Drive End Air Seal

88. Shaft Repair Sign-off

Mechanical Fits- Bearing Housings - Post Repair

89.	Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
90.	Opposite Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
91.	Bearing Cap Condition Post Repair		
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
92.	End Bell Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
93.	End Bell Repair Sign-off		
Assembly			
94.	QC Check All Parts for Cleanliness Prior to Assembly		
95.	Photograph All Major Components prior to assembly		
96.	Final Insulation Resistance Test		
97.	Assembled Shaft Endplay		
98.	Assembled Shaft Runout		
99.	Test Run Voltage		
	Volts	Volts	Volts
100.	Test Run Amperage		
	Amps	Amps	Amps
101.	Drive End Vibration Readings - Inches Per Second		
	Horizontal	Vertical	Axial
102.	Opposite Drive End Vibration Readings - Inches Per Second		
	Horizontal	Vertical	Axial
103.	Ambient Temperature - Fahrenheit		
104.	Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
105.	Opposite Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
106.	Document Final Condition with Pictures after paint		
107.	Final Pics and QC Review		